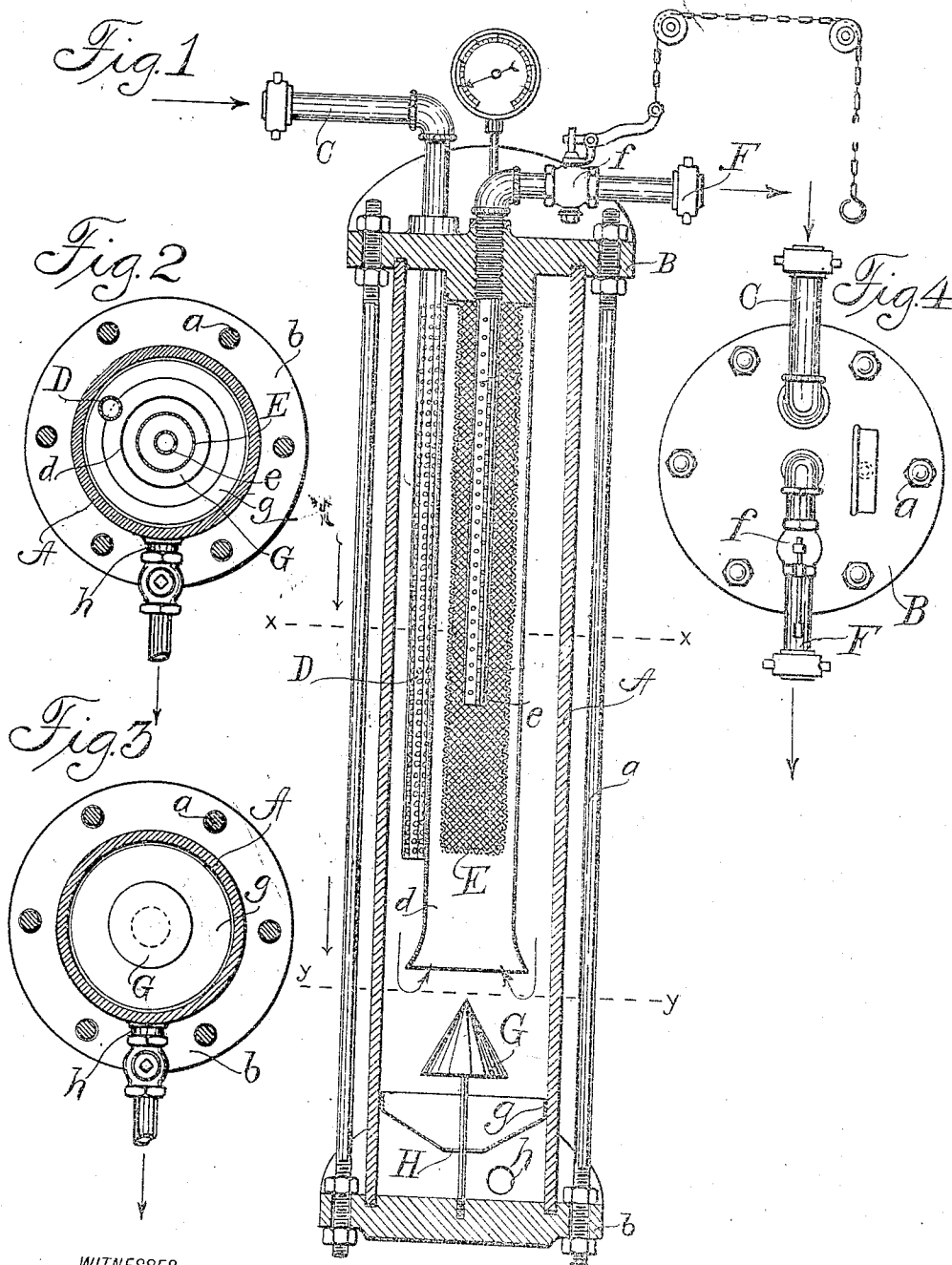


1,177,262.

Patented Mar. 28, 1916.



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AIR-FILTER.

Specification of Letters Patent.

Patented Mar. 28, 1916.

1,177,262.

Application filed April 27, 1915. Serial No. 24,248.

To all whom it may concern:

Be it known that I, LEWIS G. O'DONNELL, a citizen of the United States, residing at Coscub, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Air-Filters, of which the following is a specification.

This invention relates to air filters, and belongs to the class of devices that are used in connection with the tubing arranged to serve compressed air to pneumatic tools employed usually on metal structural work for riveting and kindred purposes and operations.

The object of this invention is the production of an air filter having parts of special construction and arrangement, including a number of perforated members through which the air must pass from the inlet to the outlet, and which are believed to be particularly effective in arresting the progress of any solid particles, and preventing them from getting into and injuring the tool, as they otherwise would if carried directly into the tool by the flow of air without the intervention of some protective contrivance.

The construction and arrangement of the parts of this invention are set forth in the accompanying drawings, of which—

Figure 1 represents a vertical section of all parts assembled. The inlet and outlet pipes are not shown in section. Fig. 2 is a horizontal or cross-section on the broken line $x-x$ of Fig. 1. Fig. 3 is a cross-section on the broken line $y-y$ of Fig. 1. Fig. 4 is a top view.

Throughout the drawings and description the same letter is used to refer to the same part.

Considering the drawings, the outer casing A is provided with a number of bolts a , which clamp the heads B and b of the casing thereon.

An inlet tube C has a perforated end portion D within the casing and arranged between the casing and the inner shell d . It will here be noted that the shell d has its lower mouth bell-shaped and open, and that the shell is not perforated.

Within the shell d is located a fine gauze pocket E, and within the pocket E is the perforated end portion e of the outlet tube F. The outlet tube is usually provided with a suitable shut-off valve f .

In the lower part of the casing A and below the bell mouth of the shell d , is a conical member or particle director G, and below the director is a dished plate or baffle g , which has a central opening H. The conical member is arranged as illustrated above the opening in the baffle plate and below the bell mouth of the shell d . A blow-off pipe h opens into the casing below the baffle plate.

In the operation of this invention, the air enters the casing through the many perforations of the end D of the inlet pipe C. A particle of any size would be caught in the end portion D and would drop downwardly through the open end of that portion of the inlet pipe. The direct rush of the air into the casing is now in a great measure stopped, and the air moves much more slowly downwardly and then curves up into the bell mouth of the shell d . When the air in its downward movement reaches the expanding sides or wall of the shell it is directed somewhat outwardly. Particles of foreign matter which are at all heavy, continue that outward movement and do not make the sudden turn upwardly into the shell d . If, however, an unusual demand for air results in a too rapid flow through the casing, and particles are carried up inside the shell, they will almost certainly be arrested there by the fine gauze pocket E over perforated end portion e of the outlet pipe, which is the most central member. As the inlet and outlet tubes are provided with numerous perforations, the air has many openings through which to pass from and into those tubes, and it does not pass as it would through a single restricted opening, that is, at a very high velocity, carrying with it any particles that may happen to have been caught up. Any particles dropping downwardly in the casing A, either fall into the dished baffle plate g , which has its concave side uppermost, or, the particles descend upon the conical director and they are directed outwardly and downwardly to the plate. Let it be assumed that this invention has been in operation for some time, and it is thought expedient to blow out the dust which may have gathered within the casing both upon the plate g and below it. The blow-off pipe h is opened, and rush of air carries out the particles that may have found their way down through the central opening H of the baffle plate. The blow-off movement of air downwardly in the casing is diverted by the director G outwardly and downwardly upon the plate, and on its

way to the opening H, the air sweeps or scours the plate and takes with it all the dust and dirt particles which may have accumulated thereon. The director, it will be understood, causes the down-rushing air to strike the plate *g* near the casing and then to pass over the plate to its central opening H, the entire plate being thus swept by air.

Having now described this invention and explained the mode of its operation, what I claim is:—

1. In an air filter, the combination with a casing, of a shell within the casing having an open bell-mouthed lower end, an inlet pipe having a perforated end portion arranged between the casing and the said shell, a wire gauze pocket arranged within the said shell and having its lower end closed, an outlet pipe having a perforated end portion arranged within the said gauze pocket, a baffle plate located in the lower portion of the said casing and below the bell mouth of the said shell, and a blow-off opening into the said casing below the said plate.

2. In an air filter, the combination with a casing, of a shell within the casing having an open bell-mouthed lower end, an inlet pipe having a perforated end portion arranged between the casing and the said shell, a fine gauze pocket, arranged within the said shell and having its lower end closed, an

outlet pipe having a perforated end portion arranged within the said gauze pocket, a dished baffle plate arranged in the lower part of the said casing and having its concave side arranged below the bell mouth of the said shell, the said plate having a central opening, and a blow-off opening into the said casing below the said plate.

3. In an air filter, the combination with a casing, of a shell within the casing having an open bell-mouthed lower end, an inlet pipe having a perforated end portion arranged between the casing and the said shell, a fine gauze pocket, arranged within the said shell and having its lower end closed, an outlet pipe having a perforated end portion arranged within the said gauze pocket, a dished baffle plate arranged in the lower part of the said casing and having its concave side arranged below the bell mouth of the said shell, the said plate having a central opening, a conical director arranged centrally above the said plate, and a blow-off opening into the said casing below the said plate.

In testimony whereof I affix my signature in presence of two witnesses.

LEWIS GRANT O'DONNELL.

Witnesses:

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